$\omega = \frac{d\theta}{dt}$ Ang velocity

$\alpha = \frac{d\omega}{dt}$ angu accele

$\alpha \, d\theta = \omega \, d\omega$

$ds = r \, d\theta$

$v = \omega r$ → velocity

$v = \omega r_p \sin\phi$

Acceleration

$a_t = \frac{dv}{dt}$ → tang

$a_n = \frac{v^2}{\rho}$ normal

→ $a_t = \alpha r$ $\quad a_t = \alpha r_p \sin\phi$

→ $a_n = \omega^2 r$ $\quad a_n = \omega^2 r_p \sin\phi$

Imp $a = a_t + a_n$

$= \alpha r - \omega^2 r$

$dr_B = dr_A + dr_{B/A}$ → due to rot. about A

↳ due to translation about of A

due to trans. & rotation

$V_B = V_A + V_{B/A}$

$V_B = V_A + \omega \times r_{B/A}$